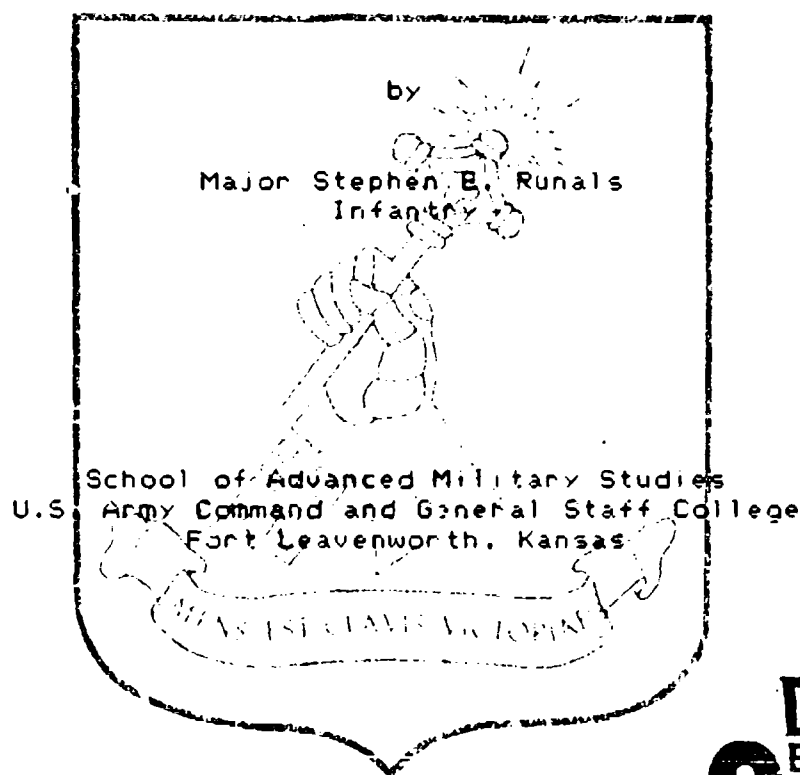


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Command and Control:
Does Current U.S. Army Tactical Command and Control Doctrine
Meet the Requirement
for Today's High Intensity Battlefield?



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Among other conclusions which are drawn from this examination of German and current US Army tactical C2 are: sound pre-war doctrine is essential to an army's ability to successfully adapt to the reality of the actual battlefield; despite historical evidence and an apparent emphasis on decentralized tactical C2, current US Army C2 doctrine and practice stress an increasingly centralized approach to tactical C2; and current US Army doctrinal C2 publications are both internally and externally contradictory.

The study includes definitions for tactical command and control, leadership, and Auftragstaktik as well as a comparison of the differences in philosophy between centralized and decentralized C2.

Command and Control:
Does Current U.S. Army Tactical Command and Control Doctrine
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for Today's High Intensity Battlefield?

by

Major Stephen E. Runals
Infantry

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ABSTRACT

COMMAND and CONTROL: Does Current U.S. Army Tactical Command and Control Doctrine Meet the Requirement for Today's High Intensity Battlefield? by Major Stephen E. Runals, USA, 57 pages.

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I. INTRODUCTION

Despite vast differences in time and scale, warfare through the ages has been characterized by four fundamental elements: danger, exertion, uncertainty, and chance.¹ After a lifetime of extensive study and experience in war, the Prussian military writer and thinker, Carl von Clausewitz, viewed warfare as a clash between independent wills, each attempting to achieve opposing objectives, played out within an environment "wrapped in a fog of greater or lesser uncertainty".²

Historically, commanders have attempted to deal with the uncertainty and chaos of war through various approaches to command and control (C2). These approaches can be identified as falling into one of two general categories: centralized control and execution -- attempting to control the uncertainty and chaos of the battlefield, or decentralized control and execution -- attempting to achieve tactical success without a need for continuous control.³

Attempts to bring order to the variables and uncertainties of war have generally been characterized by an emphasis on the "control" in command and control, while a more decentralized approach, working with the uncertainty and chaos, emphasizes the "command."⁴ (see also Appendix A) The actual choice a nation adopts for the tactical command and control of its armed forces depends, to a great extent, on its unique physical situation, political/social values, and most importantly, its view of how best to deal with the impact each of the elements of war will have on the actual execution of its own plans and orders.⁵ This view of war affects the nation's prewar tactical doctrine. Prewar doctrine in turn determines the way each nation trains to prepare for

war and the organizational structure with which it meets the realities of initial combat. The fall of France in 1940 provides an uncomfortable example of the dangers inherent in a prewar doctrine which inadequately prepared a nation's army for the reality of battle. While the inadequacy of the French Army's pre-World War II tactical doctrine was but one of the many causes for the rapid French military collapse of May-June 1940, it certainly played a significant role in the disaster which rapidly unfolded.

The French military forces were basically strong, but the doctrines that infused them were inconsistent at best and faulty at worst. ... By the time she needed it [1940], her strength was already crippled by self-inflicted wounds. 6

Today, even more so than for the French Army in 1940, the likely response time between peace and full scale mid or high intensity conflict will probably allow little, if any, time for the revision or modification of tactical C2 doctrine which proves to be inadequate or unsuitable during the opening engagements. Despite rapid advances in technology which have changed the weapons and techniques used to fight wars, little has changed its basic nature, requirements, and problems. Man still remains the central and controlling element of war and he remains unchanged.⁷ There is little evidence to suggest that the fundamental nature of man or war has significantly changed since Ardant du Picq first expressed this idea in his classic, Battle Studies, prior to the Franco-Prussian War of 1870-71.

Successes and failures from history provide us with many examples of tactical C2 doctrine and field practice which either prepared or failed to prepare a nation's military forces for the reality of war. The lessons of history may then provide a useful starting point from which

to examine the validity of current U.S. Army tactical command and control doctrine before it must be applied in actual combat. One particularly important historical example is the experience of the German Army on the Eastern Front during World War II.

This paper attempts to identify the command and control principles and techniques which were successful, at the tactical level, for the Wehrmacht during World War II. Although any number of World War II campaigns or battles could be selected for examination, the German Army's operations on the Eastern Front against the Red Army during the period November 1942 through March 1943 provide significant insight into tactical C2 requirements necessary to fight and win, despite being significantly outnumbered both in equipment and manpower. Additionally, it provides insight into those C2 principles and techniques which allowed the German Army to win tactical and even operational victories against the predecessor of our most likely opponent in any future mid-to high intensity war, the Soviet Army. Once these historically derived C2 principles and techniques have been identified, they will be compared with the principles and techniques inherent in or implied by current U.S. Army tactical C2 doctrine.

The widespread use of the term "command and control" is a relatively recent development. During World War II and the years immediately following, what is today called "command and control" was referred to as command or leadership. With the advent of a more "sophisticated battlefield" and a perceived need to emphasize individual aspects of tactical command, the term "command and control" became commonplace. Despite the volumes which have been written on C2, there appears to be no single definition which ties together the core elements which make up

tactical C2. Most definitions refer to command as a legal authority to direct military units and personnel, some address the responsibilities inherent with legal authority and many address the individual components which make up C2. While these definitions addresses some or occasionally all the fundamental elements of C2, most fail to link C2 with its most important aspect at the tactical level - leadership.⁸ In an attempt to highlight the fundamental elements of tactical C2 and provide a common working frame of reference for the subsequent investigation of C2, the following definitions have been developed from a variety of sources:

Command and Control (C2): The exercise of command, the means of planning and directing engagements and battles. Its essence lies in applying leadership, the ability to make concise rapid assessments of tactical situations, decision making, and supervision of the actions resulting from those decisions. In practice, it concerns the organization, procedures, and techniques which allow the commander to implement his will in pursuit of his assigned missions.⁹

Leadership: The ability to motivate soldiers to accomplish difficult things under the dangerous and trying circumstances of combat by providing purpose, direction, and motivation. Leadership addresses the key human element of war and is therefore central to the success of any method or system for tactical C2. Leadership at the tactical level is the most essential element of combat effectiveness, maximizing the effects of the other elements of combat power - firepower, maneuver, and protection.¹⁰

Not addressed in this study but critical to successful tactical C2 are self-contained tactical units, organized to fully integrate the effects of combined arms, merging individual capabilities of mobility, protection, and fire power to provide a capability to meet a wide range of operational requirements with minimal reorganization. Organizations which provide this inherent flexibility require less command and control than those with a less structured combined arms flexibility because they

need less external coordination to develop the same amount of combat power.¹¹

Finally, this paper focuses only on the C2 requirements for mid and high intensity combat. The requirements for the equally challenging demands of low intensity combat will not be examined, though many of the comments and findings may have application to this form of war. Additionally, throughout this study the principal focus will remain on the core principles and techniques for successful tactical C2 rather than the various subordinate elements of tactical C2 which have become the center of much of the current discussion of C2: decision making, the decision making cycle, information processing, and communications technology.¹²

11. GERMAN TACTICAL C2 AND ITS ROLE IN THE WEHRMACHT'S SUCCESSES ON THE EASTERN FRONT, NOVEMBER 1942 - MARCH 1943.

By late October 1942, the German Army had reached the height of its offensive power in Russia. From that time on, despite being outnumbered in all categories of equipment and personnel, it regularly outfought its opponents at the tactical and operational level, finally losing the war two years later from a combination of strategic level mistakes, lack of resources, and overwhelming Allied strength. Of the many campaigns and battles fought on the Eastern Front throughout the war, those of November 1942 to March 1943 provide, in one five month period, highlights of the types of experiences which would characterize the remainder of the fighting in Russia. The often repeated scenarios of outnumbered German units forced to defend on ever extending frontages,

increasingly proficient and capable massed Soviet armies attacking on broad frontages, and finally the surprising German tactical and operational victories which slowed and momentarily stopped the ever growing Soviet military strength can all be found and examined within this time frame.¹ Today, the U.S. faces, for the first time in its history, the very real possibility of having to fight outnumbered and win. A tactical C2 doctrine and practice built upon the principles and techniques demonstrated by the German Army of this period may offer the U.S. Army the possibility of equal tactical success.

The German Army Truppen F hrung (Troop Leading Manual) of 1933 formed the basis for all German prewar tactical and operational doctrine. It reflects the German conceptual view of war and remained the operating doctrine for German field operations throughout World War II. The Truppen F hrung strongly reflects Clausewitz's concept of war as a clash between independent wills in which chance, violence, and the resulting friction, play a major part in the actual conduct of battle. Uncertainty and lack of information were expected to be the norm:

Situations in war are of unlimited variety. They change often and suddenly and only rarely are from the first discernible. Incalculable elements are often of great influence. The independent will of the enemy is pitted against ours. Friction and mistakes are of every day occurrence. ² (Truppen F hrung, 1933)

Historically, the Germans viewed success on the battlefield, despite the high degree of uncertainty, to be based on three maxims:

For decades we had been trained in rapid, concise assessment of situations, in quick decisions and quick execution, on the principle: "each minute ahead of the enemy is an advantage". The entire operational and tactical leadership method hinged upon these maxims. ³ (underline in original)

To achieve these three requirements, the German Army choose to deal with the uncertainty and friction of war through a decentralized C2 system emphasizing command rather than control. German prewar doctrine emphasized four major elements: (1) a willingness and requirement for leaders at all levels to assume responsibility, (2) the right and duty of subordinate commanders to operate with freedom of action and initiative, within the intent of their higher commander's mission order, (3) a high degree of mutual trust between leaders and subordinates, and (4) an emphasis on mission rather than method.⁴

Within this system of great personal initiative and freedom of action was the clear requirement to achieve specific tactical objectives. To allow commanders to make decisions with information understood as being incomplete and/or inaccurate,⁵ German tactical doctrine called for direct commander leadership during the course of battle through his personal presence well forward on the battlefield, rather than control from a commander and staff physically removed from the scene of action. The forward position of the commander insured his access to the most current information and knowledge of the situation upon which to base his tactical decisions and orders.⁶ The need for constant personal contact between the commander and his subordinates extended to the staff. As early as 1877, officers of the German General Staff Corps were required to keep themselves "constantly in contact with the troops" to insure they did not lose their "fellow-feeling for them and their wants".⁷

An additional element of the decentralized German Army tactical C2 doctrine was the need for a small, highly effective staff capable of translating the commanders's decision and intent into fully coordinated

and supported action. Doctrine required German tactical staffs to be able to work out the details of all plans and orders from their commander's decision and intent without detailed commander supervision, thereby allowing the commander to focus his attention on operational problems and requirements:

The General Staff is intended to convert the ideas of the general commanding into orders, not only by conveying the former to the troops, but far more by working out all the necessary matters of detail, thus relieving the mind of the general from a great amount of unnecessary trouble. 8

German doctrine and practice maintained that to keep its command focus, staff size had to be kept to the absolute minimum to retain its high mobility and prevent the development of an over reliance on control.⁹ As a result, the German Army consciously elected to be content with only modest amounts of technical detail and failed to develop the scientific management methods put into practice by many of the other national armies of the same period.¹⁰

The Truppen Führung, with its view of war as the interaction of mission requirements superimposed upon an environment of uncertainty and chaos, outlined a method of C2 commonly understood as Auftragstaktik (see Appendix B for a full description of Auftragstaktik). To work successfully this method of C2 required a body of highly trained professional officers with a common background and a common understanding of tactical concepts "trained within a system which allowed a very great deal of freedom of action and freedom of execution."¹¹ The critical question for the German Army would be: could an army based on such a command method still function in the same manner after the demands of three years of war had extracted its casualties on

the professional prewar officer corps and their positions filled by officers with greatly reduced training and experience?¹²

During the summer and early fall of 1942 German ground forces had overcome the temporary setbacks of the first Russian winter counter offensive (Dec 1941) and resumed their advance into southern Russia, advancing to the industrial area around Stalingrad and into the Caucasus. By mid November, however the strategic and tactical situation had dramatically changed. The German Army became involved in a fight for its life. On 19 November, Soviet forces launched a massive counterattack which encircled the German 6th Army at Stalingrad and threatened to cut off the entire Southern Wing of the German Army south of Rostov.

During the two months following the encirclement and fall of Stalingrad, the Russians pursued the defeated German armies relentlessly along a 750-mile front, which in the south attained a depth of over 400 miles. Gen Frido von Senger und Etterlin, Commander of the 17th Panzer Division during this period, describes the fighting of his unit:

Day and night uninterrupted fighting ... rapidly changing situations. Battle groups were separated by 30 km with battalions on a broad front of 25 km. No two days of fighting are alike. The division possessed one AT gun, eight tanks, all battalion commanders were killed and adjutants commanded in their place. By the night of 19 December the battalions of the division had experienced three days and nights of intense fighting in temperatures of minus 15 degrees [centigrade]. In one night alone it had suffered casualties equivalent of one battalion. 13

Despite these exceptional tactical and operational setbacks, German ground forces continued to fight and win at the tactical and even operational level against overwhelming Russian odds. By February of

1943, Field-Marshal Erich von Manstein's Army South Group had not only been able to stop the Soviet offensive, but was also able to recover much lost ground, reoccupying many of the defensive positions it had been forced from during the intense fighting of January 1943.

On the evening of 28 Feb the XL Panzer Corps was again on the Donets over a broad front, in positions which they had abandoned in January. ... In the continuous fighting by Hoth's Pz Corps six Tank Corps, ten rifle divisions, and half a dozen independent brigades had been destroyed; a total of 615 tanks, 400 guns and an additional 23,000 Soviet dead. 14

The reasons for the German defensive victories of early 1943 were as complex as the reasons for its earlier offensive successes. Superior training and experience, high morale, effective tactical and operational intelligence, and more effective air ground coordination are but several of the individual means used to achieve these victories. Nevertheless, the ability to develop and synchronize the effects of each of these means to produce the combat power necessary to achieve the tactical and operational successes of this period were the result of effective tactical command and control.¹⁵ Despite being out numbered in both men and equipment, the German Army was able to continue to fight and win.

The application of German C2 doctrine to its field organizations and procedures at the tactical level during the fighting of November 1942 to March 1943 can be examined through the experiences of German Army officers of this period in three inter-related areas: the role of the commander, the operation and function of the staff, and the action of subordinate commanders. Selected examples have been taken from the experiences of those German Army corps and division commanders and staff officers who played major roles in the difficult fighting of this period.

The 1933 Truppen F hrung clearly required the active personal involvement of the commander in the conduct of tactical operations.¹⁶ The Wehrmacht's combat experience in the campaigns of Poland, France and Russia had reconfirmed the need for active commander involvement on the battlefield. During the intense winter fighting of November 1942 to March 1943, the active presence of the commander's personal leadership during the conduct of the battle became one of the few means available to the outmanned and equipped Wehrmacht to counter a quantitatively superior enemy on the highly fluid and uncertain Russian battlefield. To be able to survive, German units were required to act and react quicker than their enemies, "Forward Command" provided this capability. Active commander involvement normally took the form of forward leadership, required for the following reasons: (1) to obtain a clear view of the battle, (2) to be in position to take advantage of "windows of opportunity", (3) to build and maintain unit morale and confidence, and (4) to insure the full coordination of effort at the point of main effort. Comments from selected German officers have been chosen to provide illustrations of the importance each of these elements played in the German Army's tactical successes during the winter battles of November 1942 to March 1943.

(1) To Obtain a clear view of the battlefield:

The experienced armored division commander on the scene of battle is the only commander who is in a position to comprehend the situation and act with the necessary speed and dispatch.¹⁷ (Gen Friedrich Schultz, Cdr 48 Pz Corps)

At night the division commander returns to his static battle headquarters. Here he discusses the day's activity with G.S.O. I (operations officer). From here he also speaks with the corps commander and reports his impressions of the fighting. These are very important, being a distillation of

of his own experiences and reports from the units under his command. They give him added authority in opposing any senseless demands from above, and in making counter proposals. 18 (Gen Frido von Senger U. Etterlin, Cdr 17th Pz Div)

(2) To be in position to take advantage of "windows of opportunity":

The secret of modern armored leadership is that every thing has to happen in the blink of an eye. That can only be accomplished if the commander is right at the point of action 19 (Gen Hermann Balck, Cdr 11th Pz Div)

The right moment alone, correctly judged, exploited with lightning speed and prompt action, can produce victory - and that despite the fact these victories may not at times correspond to the exact ideas and wishes of the higher command. This must be accepted in silence. Victory is the only thing that matters. 20 (Gen Schultz, Cdr 48th Pz Corps)

The division commander (Gen von Manteuffel, Cdr 7th Pz Div) was always in a combat car beside us - commanding from the front not rear. Because the division commander was always beside the commander of the tank regiment, it was always possible to have standing discussions between the two officers, to be flexible, and to react or as we see later, to attack if the situation was good enough. We did not have to ask anybody (for permission to attack) with the exception of reporting to corps. 21 (Col Rothe, Adjutant 7th Pz Div)

(3) To build and maintain unit morale and confidence:

It goes without saying that the forward position of the division commander also had a psychological effect on the troops. He is able to watch his men and see his orders are swiftly executed. The knowledge that the division commander himself is near at hand has been shown by experience to speed up events at critical moments. ... Above all, the commander has the indispensable contact with those who carry the burden of the battle - the battalion commander's. ... Confidence is a magical source of power, the troops know their commanders would take care of them. 22 (Gen von Senger, Cdr 17th Pz Div)

The ability to achieve quick movement is the result of the commander moving with the unit. After all, the men were dead tired and nearly finished. I rode up and down the columns and asked the troops whether they preferred to march

or bleed. 23 (Gen Balck, Cdr 11th Pz Div)

(4) To insure the full coordination of effort at the point of main effort;

We in the Panzer corps were used to seeing our commanders behind us. In difficult situations like this, our general followed the attack in a command tank. 24 (Col Stoves, staff officer 1st Pz Div)

The Task Force commander should personally direct the movements of his troops. Remaining in the second line of attack, I (as division commander) followed the forward echelon and occasionally moved my command post directly behind it. I was always in a position to halt the advance of the tanks, to change their direction, or to withdraw them from action. 25 (Gen von Senger, Cdr 17th Pz Div)

The considerable advantages gained by the forward presence of the commander had, of course, to be reconciled with the commander's responsibility to retain control of the elements of his command outside the area of his personal observation. The commander's presence at the decisive point and his ability to maintain a distinctly "operational" focus were made possible by advances in technology and organizational procedures. The radio allowed the commander to position himself at the place which required the most impact of his personal presence and leadership. 26 Technology allowed the commander to maintain contact with and command of the individual elements of his unit, even when they were separated over great distances. More importantly, the commander's freedom to lead from the front was made possible by the work of a small, highly effective staff and subordinate commanders able to effectively operate with initiative and minimal command supervision.

As previously noted during the discussion of pre-World War II German doctrine, the idea of a small highly effective staff, able to convert the ideas and decisions of the commander into completed and coordinated

plans and orders, relieving the commander "of all detail work, including the requirement for the execution of orders", had been a central feature of German Armies since the time of Clausewitz.²⁷ World War II field experience confirmed the need for a continuation of this practice.

Since the tactical group (operations branch) shaped the tactical intentions and operations plans and orders, within the commander's decision and intent, it held the dominant position within the staff.²⁸ Overall staff size was kept purposely at the minimum level to insure performance of its mission and to prevent a growth of bureaucracy and an overreliance on control.²⁹ Constant supervision was exercised, especially during this critical period, to insure that authorized staff strength levels were not exceeded. The frequent visits by higher level staff officers to subordinate commands were, in part, used to continually check on the accuracy of reported subordinate unit staff strengths.³⁰ Staff size could be kept small by insuring that primary staff officers were able to solve operational problems without being dependent upon a large number of specialists. Special staff officers were in most cases commanders of combat support units (artillery, engineers, etc.).³¹ Discussing staff organization after the war, Gen Halder (Chief of Staff of the German Army until 1942) wrote:

Key staff positions must be prepared to solve their problems without being dependent on the assistance of a large retinue of extra specialists. If this goal is not attained, specialization will develop into an octopus which will throttle the vital element of command. ... This [an expanded staff with technical specialists] would be the ruin of daring and versatile command and the end of the art of strategy, which is the most reliable guarantee of success in warfare. ³²

Despite their small size, German tactical unit staffs were expected to operate with a great deal of freedom and responsibility, insuring

that the entire unit's effort was fully coordinated and positioned to support the commander's decision and concept of operation. Although no single procedure can be attributed to all divisions and corps, many successful units which took part in the difficult fighting of late 1942 and early 1943 operated with the commander issuing guidance and making operational decisions from field locations, then moving to the point of the unit's main effort. The staff under the direction of the Chief of Staff, in the case of a corps or the operations officer (Ia) at a division, developed the orders and conducted the necessary coordination between subordinate units and higher headquarters to execute the commander's decision and intent.

This method of conducting operations (commander being forward) at the division level assumes that the commander has a well trained chief of staff. For the latter, among other things, must be able, in the commander's absence, to make independent decisions - insuring the protection of the division flanks, the constant availability of reserves, and in particular situations, security of bypassed enemy elements. 33 (Gen von Senger, Cdr 17th Pz Div)

The division commander had his place with the group which was to make the main effort. He visited the regiments several times a day. The division headquarters was somewhat further back and did not change its location during operations. There information was collected, supplies were handled, and reinforcements sent on their way. 34 (Gen Balck, Cdr 11th Pz Div)

Additionally, German units did not rely on lengthy operations orders. Orders were primarily given over the radio or given face to face during discussions between field commanders. Gen Balck, as commander of the 11th Pz Division, refused to issue written orders. German commanders viewed short, usually verbal, orders as the primary means to allow rapid reaction to the requirements and opportunities of the battlefield 35. Field-Marshal Manstein's (Commander, Southern Army

Group) order to the 5th (Viking) SS Pz Division, during the critical battle 21 Feb-14 March 1943 to prevent the Russians from cutting off the German Southern Army Group south of Rostov, provides an excellent example of the short verbal orders which characterized German operations:

While still on the move they received a signal from Manstein: "Strong enemy - Popov's Armoured Group - advancing across Donets at Izyum in a southerly direction towards Krasnoarmeyskoye. 'Viking' will wheel to the west immediately. Objective: tie down Popov's Armoured Group." 36

The third and final element of German C2 organization and field procedure to be examined is the vital role played by the subordinate commander. By accepting the uncertainty and rapidly changing nature of the battlefield as a fundamental element of war, the Germans recognized that only the commander on the spot was in a position to determine the most effective methods and means to accomplish an assigned mission. He alone had the most accurate and updated information necessary for the successful employment of his units.³⁷ By regulation, subordinate commanders were expected to assume responsibility and demonstrate personal initiative in the accomplishment of their assigned missions. Despite the expansion of the German Army to meet wartime requirements, losses of leaders as the war progressed, and increasing interference from Nazi party leaders and higher headquarters, these traits continued to be widely demonstrated throughout the war.³⁸ To a large measure the continued German tactical success was the result of sound doctrine and a tactical method of C2 which forced subordinates to demonstrate these traits.

German Army experience placed a high demand on subordinates who were willing to accept responsibility and able to exercise freedom of

action. Developing the ability and confidence of senior commanders to delegate authority and tactical initiative to subordinates cannot be imposed from above. It can only be the result of a high degree of trust and confidence between leaders and an accurate understanding, by the commander, of the capabilities and limitations of his subordinate units and their commanders.³⁹ Field experience, time and again during the desperate fighting of late 1942, demonstrated that this critical freedom of action and subordinate initiative could only be nurtured and developed in their subordinates if senior commanders remained focused on mission rather than method. Subordinate commanders, in the best position and with the most accurate battlefield information, were given freedom to select the actual methods and means to accomplish their assigned missions. Freedom of action was, however, only given to subordinates in relation to their demonstrated ability to accomplish the commander's assigned mission.

The right moment alone, correctly judged, exploited with lightning speed and prompt action, can produce victory - and that despite the fact these victories may not at times correspond to the exact ideas and wishes of the higher command. This must be accepted in silence. Victory is the only thing that matters. ⁴⁰ (Gen Schultz, Cdr 48th Pz Corps)

Foster individual initiative at all levels - Army to squad. Accomplished (by) rarely reproaching subordinates unless they made a terrible blunder. We found that leaders at any level grow with their experience. Initiative should be fostered in the case of the division commander just as much as in the case of a platoon commander. ⁴¹ (Gen Balck, Cdr 11th Pz Div)

This high degree of subordinate freedom of action could only be exercised within an atmosphere of true trust and confidence between commanders. Mutual trust was developed as a result of senior commanders being regularly forward to assess the capabilities and limitations of

their subordinates in times of stress and subordinates, who through close personal contact with their commanders, came to know the senior commander's desires and true intentions. It is also the result of a common understanding of tactical concepts and terminology.⁴²

The corps commander must daily, personally, and minutely discuss the situation with the armored division commander and furnish the latter detailed information on his intentions. A high degree of mobility and complete confidence in the armored division commander and his staff is required. The two commanders must know each other and know how to work together. ⁴³ (Gen Schultz, Cdr 48th Pz Corps)

To further develop a common understanding of both terminology and insight into the unit commander's intent, many German commanders would "war game" possible reactions to potential Russian actions. These "war games" were not so much a method to develop contingency plans, rather a means for the commander to propose situations which would require commanders and staff to respond to time sensitive situations. From the ensuing discussions, subordinate commanders and staff gained additional insight into how their senior commander might respond should a similar situation arise; the senior commander gained additional insight into the capabilities and limitations of his subordinates. When the Russians did appear at unexpected times and places, subordinate commanders and staff alike could rapidly respond, within the commander's intent, to the situation without first conferring with their commander.⁴⁴

One final point needs to be identified in the critical senior-subordinate relationship between German field commanders. Built into the German system, both in doctrine and from experience, was the ability and understanding that when the situation required, senior commanders could direct the actions of individual combat units and in

extreme cases, actually assumed "direct tactical control" of these units.⁴⁵ German commanders understood that "command bypassing" was not the result of a dissatisfaction with the performance of the subordinate commander but rather an emergency measure used by the senior commander to redirect the effort of the unit to take advantage of battlefield opportunity or to allow the commander to impose the full impact of his will at the decisive time and place. In all cases the subordinate, rather than becoming a bystander, was freed to move further forward to exert the full force of his will on a critical subordinate element or to coordinate the efforts of the remainder of his unit to support the point of main effort, thereby insuring the fullest coordination and "use of every man and each weapon available to establish a point of main effort at the decisive spot" to achieve tactical success.⁴⁶

Summary of German field experience during the fighting of late 1942 through early 1943:

German tactical C2 as exercised during the difficult fighting of November 1942 to March 1943 was able to operate within the context of prewar doctrine. To a large extent, this was the result of a realistic prewar understanding that the requirements of war place the real burden of effective action on the commanders and units in contact. The consistency between prewar doctrine and its application on the battlefield can be seen in a postwar review of the US Army 1949 Field Service Regulation 100-5 (the equivalent of our current FM 100-5, Operations) by a selected group of some ten German General Staff officers, all with combat experience. Despite six years of almost continuous mid to high intensity war, their recommendations for and

corrections to FM 100-5 re-emphasized the prewar doctrine outlined in the 1933 Truppen F hrung. If any area received additional emphasis, it was that the uncertainty and rapid pace of modern battle requires commanders to position themselves where they are best able to place the full force of their will and personal leadership.⁴⁷

The principles and techniques of German tactical C2 can be summarized into four areas:

(1) A realistic view of war. Organizations and procedures developed from the premise that despite a constant need for accurate and timely information upon which to base tactical decisions, uncertainty and disorder will be the battlefield norm. Commanders and their staffs, responsible for decision making and development of supporting actions and orders, must be capable of operating with this uncertainty.

(2) Forward Command. The active personal involvement of the commander in the conduct of the battle is essential at the tactical level. This generally resulted from his forward presence where he was able to gain a clear, unfiltered understanding of the events taking place and a continual updated understanding of the performance and capabilities of his own and the enemy forces. Additionally, his forward presence allowed him to issue orders directly to subordinate commanders based on realistic, accurate, and timely information enabling subordinate commanders at each level to take advantage of battlefield opportunities as they occurred. When required by the situation, the commander was also in a position to bring to bear the full force of this will and authority to insure the attainment of specific objectives or to redirect the units main effort by coordinating external support for or

assuming actual command of the units in contact. This capability to "command bypass" was effective because of its institutionalization in both doctrine and practice as part of the commander's "repertoire" of command techniques.⁴⁸ Despite a constant emphasis for commanders to be continually forward, German commanders recognized that any thing can be over done. All recognized the need to spend time at their rear headquarters to discuss the situation with their staffs, coordinate with higher headquarters, and plan future operations.⁴⁹

(3) A small effective staff. A small effective staff able to turn the commander's decision and intent into required actions and orders with little detailed command guidance and supervision. Staffs at all tactical levels were able to free the commander of administrative requirements, allowing him to move forward to obtain and provide accurate information and exercise his personal leadership where required. Staffs had the authority and capability to coordinate, control, and direct, when required, the unit's total effort toward achieving the commander's intent. This allowed the commander to focus totally on "operational" requirements.

(4) Subordinate commanders. Subordinate commanders able to operate, within the limits of their ability, with freedom of action and initiative, consistent with the intent of the senior commander, to choose the methods for accomplishing their assigned missions. Subordinate commanders knew that their actions would be supported by their commander and understood that as the situation became critical, they would be able to count on his physical presence to provide necessary guidance and direction, make required decisions, and if need

be, assume control of the action to insure that every possible advantage has been taken and every effort made to achieve the assigned objective. This freedom to allow subordinates initiative and freedom of action in choosing the methods to accomplish their assigned missions came only from a premise of trust and confidence between commanders.

Throughout this discussion little mention has been made of technology. In fact the German tactical C2 method of "Forward Command" could not have been possible without the radio.⁵⁰ It should be noted, however, that advances in technology were first tailored to allow the commander to command from the critical point on the battlefield rather than increase his capability to control. The radio, in fact, allowed the commander to focus his efforts at the time and place desired, while using advances in technology as "an economy of force" to enable his staff to integrate the supporting actions of his subordinate elements to maintain the main effort.

III. CURRENT U.S. ARMY TACTICAL C2 DOCTRINE

U.S. Army doctrine anticipates the future high intensity battlefield as being characterized by an ever increasing capability and lethality of weapons and weapon systems, a high tempo of operations, and a high degree of uncertainty:

The high and mid-intensity battlefields are likely to be chaotic, intense, and deadly. rapid movement will be complemented by the use of advanced, highly lethal weapons ... air mobility, long-range fires, and special operating forces (SOF) will blur the distinction between the front and rear ... Fluidity will characterize operations. 1 (FM 100-5)

Despite the increases in scope, lethality, and use of nuclear, chemical, and biological weapons which have changed the means used to fight on the battlefield, the elements of war (danger, exertion, uncertainty, and chance) identified by Clausewitz have remained constant. The characteristics of uncertainty and chaos and the demanding requirements of battle are in fact very likely to be similar to those faced by the German Army in southern Russia following the encirclement of the 6th Army at Stalingrad in 1942.

Currently there appears to be no single doctrine for U.S. Army tactical command and control. More importantly, there appears no common agreement on what such a doctrine, if published, should entail. Principal elements of current U.S. Army tactical command and control "doctrine" are found in FM 100-5, Operations (DRAFT), 1985 and FC 101-55, Corps and Division Command and Control, January 1985. Despite a common view of the future battlefield, there are significant differences in the solutions each publication prescribes to the question of how best to deal with the age old problems of battlefield uncertainty and chaos. FM 100-5 clearly lays out the requirements for the C2 system with which its authors expect to fight the AirLand Battle and win on the future battlefield:

The C2 system that supports the AirLand Battle doctrine must facilitate freedom of operation, delegation of authority, and leadership from critical points on the battlefield. ... Commanders must expect considerable variation from plans during the course of action. It must leave the greatest possible tactical and operational freedom to subordinates ... to permit independent action by subordinates in pursuit of commander's goals. 2

Using the criteria identified for successful tactical C2 from our review of German World War II experience in southern Russia, let us now

examine current U.S. Army tactical C2 doctrine under the same four major headings: (1) the fundamental nature and concept of war, (2) the expected role and function of the commander, (3) the operation and function of the staff, and (4) the actions of the subordinate unit commanders.

Although FM 100-5 and FC 101-55 both recognize that a high degree of uncertainty and chaos will characterize modern warfare, the U.S. Army's approach to dealing with the fundamental elements of war appears to emphasize control. FC 101-55 defines "command and control" as:

Command and Control synchronizes and coordinates combat power on the battlefield and provides the direction to fight. ... Command and control are two different processes:

Command is the process by which the will and intent of the commander is infused among subordinate. This process is directive; its premise is reliable subordinate behavior

Control is a process by which subordinate behavior inconsistent with the will and intent of the commander is identified and corrected. This process is regulatory; its premise is unreliable subordinate behavior. ... It [unreliable subordinate behavior] will normally be inadvertent, resulting from different perspectives of the battlefield, inattention, or a lack of understanding of the mission or the commander's intent -- the fog of war. In a perfect world, where subordinates fully embrace the will and intent of the commander, and execute those without flaw, control would not be necessary." 3 (underline added)

FM 100-5 takes a different approach, describing command and control as a single process which emphasizes planning, decision making, supervision, and most importantly - leadership:

Command and control is the exercise of command Its essence lies in applying leadership, making decisions, issuing orders, and supervising operations. 4

Significantly missing from both these definitions of C2 is any mention of the opposing will of the enemy commander and the unforeseen

effects and opportunities resulting from the "frictions" of battle. Most significantly, while FM 100-5 places an emphasis on leadership, FC 101-55 must, of necessity, focus on correcting the actions of unreliable subordinate commanders who, either because the commander failed to insure that his subordinates understand his "will and intent" or from the lack of a common understanding of the requirements and reality of the battlefield conditions, failed to execute as the commander desired. In either case, they are an admission of a failure of command. Additionally, despite recognizing the likely requirement that uncertainty will be commonplace, both publications fail to issue a clear statement that the uncertainties of war will require the commander to make timely decisions with an incomplete understanding of the friendly and enemy situation.⁵ The implied requirement is for the commander to act only after all decision making information is made available and probable enemy reaction anticipated:

Once the enemy reaction to each alternative concept has been anticipated, the feasibility of each alternative is evaluated by the staff and a recommendation is presented to the commander for decision. ⁶ (FC 101-55)

If an unanticipated situation arises ⁷ (underline added) (FM 100-5)

The division commander may locate himself at a tactical command post or main command post as the need for decision making varies, or he may locate him away from either if communications permit him [to continue] to make fully informed decisions in some other location. ⁸ (underline added) (TRADOC PAM 525-2)

With this underlying premise of unreliable subordinate behavior and need to be able to accurately "see" the battlefield and anticipate enemy action before acting as the basis for U.S. Army's tactical C2 doctrine, field commanders and their higher headquarters are required to emphasize

control rather than command. By its nature, control attempts to bring order to the disorder of the battle by attempting to manage its many interdependent elements; "it provides the mechanism to compensate for the unreliability of subordinates." 9

While FC 101-55, and to a lesser degree FM 100-5, appear to emphasize a need for control, they both recognize the potential problems with this approach.¹⁰ This recognition, however does not reflect the strong position taken by a select group of selected German generals, led by General Halder, who in 1953 conducted a detailed review of the 1949 U.S. Army Field Service Regulation 100-5, Operations. From their own wartime experience, these German officers recognized that uncertainty will continue to be the norm on the battlefields of the future and that attempts to control the events of battle will only result in frustration, confusion, and lack of success. Further, U.S. Army tactical C2 doctrine appears not to take into account Clausewitz's stern warning that all information in war is contradictory.¹¹

Any doctrinal lack of clarity in how the U.S. Army plans to deal with the uncertainty and chaos resulting from the expected high tempo of tactical operations becomes clear upon examining where the Army is currently placing its research, development, and procurement emphasis -- control and information processing through high dollar systems technology. A recent article in Defense Electronics clearly reflects where the current U.S. Army's C2 emphasis lies:

Minimizing or even eliminating the confusion of any future battle through the innovation use of command, control, communications (C3I) has become a major Pentagon objective.

PLRS and Joint Tactical Information Distribution System (JTIDS), along with a handful of new tactical radios and satellite navigation signal receivers, will help the services skillfully maneuver, accurately direct firepower,

and conduct the interdictive strikes that are part of the Army's AirLand Battle 2000 strategy. ¹². (underline added)

Despite the current U.S. Army C2 procurement and development focus on technology to provide the solution to battlefield uncertainty and control, the U.S. Army has failed to provide a standardized technical operating language for its C2 systems. As a result, a "hodge-podge" of different systems and procedures have developed which quite often do not interface internally or externally with one another.¹³ High dollar systems technology is not a solution proposed solely by governmental civilians. In the same Defense Electronics article, Gen Elton, then commander of the 9th Infantry Div at Ft Lewis, is quoted after a PLRS test at Ft Lewis as saying that PLRS is an important force multiplier and that commanders "would be operationally 'deficient' until they again became PLRS equipped. I consider PLRS capabilities essential to successful HTLD employment on the future battlefield - wherever it may be." ¹⁴

The German Army of World War II identified the principal role of a commander as a leader who motivates and guides his subordinates in the successful accomplishment of their assigned missions. Current U.S. tactical C2 doctrine describes a commander, who among other primary duties, is a leader.¹⁵ Only in FM 100-5 is leadership emphasized as being a central feature of tactical C2, not only in its definition of C2 but in the importance it places on leadership as "the essential element of combat power". ¹⁶

FC 101-55 takes an entirely different view of the role of the commander. While stating that "efforts should be directed toward an emphasis on command, minimizing necessary control" ¹⁷, FM 101-55 describes the commander as a manager "who spends much of his time in the

planning and operations cells of various command posts of his headquarters and occasionally visiting subordinate headquarters to observe the battlefield".¹⁸ FC 101-55's "doctrinal" view of the position of the commander can be contrasted against the field practice of German commanders like Col-Gen Hoth, Commander of the 4th Pz Army during the chaotic fighting around Rostov of late 1942 and early 1943. Every morning at daybreak, Gen Hoth would set out in his command car to visit his "shrunk divisions and visit their commanders at their headquarters", returning each night to his headquarters "to meet with his chief of staff to discuss the day's events and review the log of telephone messages from Manstein's headquarters".¹⁹

FC 101-55 describes motivation of subordinates as an integral part of command. Motivation is identified as one of eight "critical functions" of the commander. The commander is expected to motivate through this presence and personal influence, "instilling the will and confidence to fight and win". FC 101-55 continues its emphasis on control by further dividing motivation into eight sub-functions, seven of which emphasize control of assets or battlefield events. The eighth, "communicate with principal subordinates", makes no mention of the requirement to build mutual trust and confidence between commanders through this "communication" or the requirement for the commander to personally position himself at the decisive time and place during the battle to exert the full force of his will.²⁰ This position can be contrasted to the German belief that trust and confidence between the leader and his subordinates are the cornerstones upon which successful tactical operations are built.²¹

Throughout the period of our study, German commanders were a primary source of timely and accurate information to their staffs because of their forward position. U.S. Army tactical C2 doctrine portrays the tactical unit staff as the principal source of decision making information for their commanders. FC 101-55 outlines the requirements for unit staffs to provide their commanders with the accurate information and recommendations on the enemy and friendly situation necessary to make critical command decisions:

One of the primary functions of the staff is to provide the commander an accurate picture of the battlefield. 22

Methods must be established to display available information so that situational changes are highlighted and information is easier for the commander and other key decision makers to assimilate. 23

Once the enemy reaction to each alternative concept has been anticipated, the feasibility of each alternative is evaluated by the staff and a recommendation is presented to the commander for decision. 24

Finally, while FM 100-5 recognizes the sole purpose of tactical C2 is to implement the commander's will, FC 101-55 states that the "military-decision making process is the focal point of command and control". 25 Neither publication places a strong emphasis on the commander's mission being the sole basis for all commander and staff action, something recognized and repeatedly highlighted in the Wehrmacht. 26 An emphasis on the decision-making process attempts to insure that the commander has the best possible information upon which to base his tactical decisions. It does, however, imply the centralization of planning, execution, and control of action on the battlefield. This concept remains consistent within the general U.S.

Army doctrinal trend to place substantially more emphasis on control than the Germans, who emphasized command.²⁷

While FM 100-5 does not discuss in any detail the operation and function of tactical unit staffs; it instead outlines the requirements for a C2 system which "facilitates freedom of action, delegation of authority, and leadership from critical points on the battlefield"²⁸, FC 101-55 describes in some detail the responsibilities and expected duties of tactical unit staffs. These responsibilities and functions continue to reflect the U.S. Army's focus on control.

FC 101-55 describes tactical level staffs as small, highly effective organizations, fully capable of directing and coordinating the execution of the commander's intent and decision. Unit staffs are expected to provide the necessary control on the battlefield. Staffs are expected to prepare the plans and orders which express the commander's intent. At division level, these plans and orders are generally written, using the format provided in FM 101-5, Staff Organization and Operations. Staffs are to provide predictive intelligence and contingency plans based on the occurrence of feasible enemy courses of action. These plans are used to create opportunities to seize the initiative by reducing the time for the decision making process in time-sensitive and stressful situations.

Once in receipt of the unit's mission and the commander's guidance, tactical level staffs are expected to analyze enemy reaction to possible courses of actions and provide, under the direction of the chief of staff and operations officer (G3), fully developed and coordinated recommendations to the commander, who in turn is able to make a sound, informed decision based on these staff estimates and recommendations.

As changes develop in the battle, these same staffs are expected to sense the need for action through a selective screening of the continually arriving information from the battlefield and provide the commander a fully developed and coordinated recommendation for action. Appendices A and C of FC 101-55 provide a model for the organization of standard corps and heavy division headquarters staffs.²⁹

FM 100-5 provides a more informal approach on how tactical orders should be developed and issued. The field manual specifies that whenever possible, subordinates are to receive their orders from the commander during face-to-face discussions on the ground chosen for the operation. Orders should state specifically what must be done without prescribing how it should be accomplished. Control measures imposed for cooperation and coordination should "not overly restrict the subordinates freedom of action".³⁰

Both views of staff operation and function can be contrasted to the German practice discussed earlier. German tactical staffs placed the primary emphasis for decision making information on the observations of the commander who was forward in position to see the battlefield and in personal contact with the commanders actually fighting the battle. The commander's decision, transmitted to the staff for coordination and dissemination as required, became the basis for action. Freedom of action to respond to individual battlefield requirements, as they developed, without a requirement to continually obtain the commander's approval for action, was given to the chief of staff and subordinate commanders. Additionally, German units did not rely on lengthy operations orders. Orders were primarily given over the radio or given face-to-face during discussions between field commanders. General

Balck, as a division, corps, and army commander, refused to issue written orders throughout the war. German commanders viewed short, generally verbal, orders as the primary means, and critical factor, to insure rapid reaction to the fast paced requirements of the battlefield.³¹

The final element of U.S. tactical C2 to be reviewed are the actions and roles expected of subordinate commanders. Both FM 100-5 and FC 101-55 state an unqualified need for subordinate commanders able to exercise initiative and operating with freedom of action within the intent of the commander.³² The current interest and emphasis on "mission-type" orders is an attempt to build-in initiative and freedom of action to current doctrine and field operations.³³ Interestingly, despite this emphasis, FC 101-55 states:

Since some latitude is given to subordinates in the execution of assigned missions, the staff must maintain close liaison with subordinates to adjust plans as necessary.³⁴ (underline added)

A sound plan must include a clearly specified course of action and means of execution.³⁵ (underline added)

Despite the clearly identified requirement for a decentralized command-oriented C2 system, FC 101-55 does not emphasize a need for a "clearly specified mission." Nor does it appear to encourage commanders to allow their subordinates freedom to choose the means for the actual accomplishment of their assigned missions, even if the means selected do not correspond to the "exact ideas and wishes of the higher commander - victory being the only thing that matters."³⁶ Finally, while retaining the ability to control the actions of subordinates inherent to all military organizations, there is little emphasis on the critical

requirement to build the strong mutual trust and confidence between leaders and led which makes the use of command "by-passing" effective, while still insuring that personal initiative and responsibility are not stifled. 37

The picture presented of current U.S. Army tactical C2 doctrine has been one of conflicting direction, guidance, and requirements. It appears to place an emphasis on control and management of the uncertainties of war as opposed to the German doctrine and practice which emphasized command and leadership, taking advantage of the uncertainty and chaos of battle. It is always dangerous to take material out of context during a study such as this. The same information can, if not used carefully, be used to support any number of arguments. Additionally, what is written in doctrine, especially for the U.S. Army, may not in fact reflect what is practiced in the field. The results of field training may, however provide some insight into how well this apparent emphasis on control in current tactical C2 doctrine is being applied at the tactical unit level.

A quick review of the performance of U.S. Army units at the National Training Center (NTC) provides some indication of how well the current C2 focus on information and control has developed our ability to meet the identified requirements for individual initiative and bold and imaginative action required at all levels, anticipated to be so critical on the future battlefield by both FM 100-5 and FC 101-55. While oriented at the battalion and brigade level, the results of NTC training may reflect what might be found at all tactical levels should the U.S. Army go to war in the immediate future.

At all levels, subordinates frequently fail to report accurately, to make recommendations, and to request or suggest changes in a plan. ... Leaders seem to be satisfied with the situation - subordinates seem to lack a sense of responsibility. ... Junior leaders and soldiers do things they know are inappropriate because they "were ordered to do it". They do not feel that they have the latitude to make on-the-spot adjustments a situation demands. 38

The description in a recent Military Review by Maj Harry Teston Jr., currently assigned to Naval Special Warfare Group #1 Coronado, CA, of the performance of a U.S. Army battalion task force (TF) at NTC points out many of these same problems.³⁹ Maj Teston identifies further significant shortcomings: subordinate commanders who fail to clearly understand their commander's intent, a failure on the part of the TF Commander to position himself at the decisive point on the battlefield to influence the action, and a general lack of coordination between all subordinate units, in short, many of the same reasons FC 101-55 places an emphasis on the need for "control". Maj Teston correctly points out that the reasons for these shortcomings are the result of failures by the commander and his staff to insure that the critical elements of "command" were achieved. Disturbingly, he states these same findings are common in many of the units training at the NTC. They reflect a failure of command and leadership not control.

The current U.S. Army focus on control rather than command may have developed habits which if left uncorrected, will be difficult, if not impossible to break during the critical opening moments of war. The problem with a control rather than a command focus, is that instead of broadening unit and subordinate commander capability for independent action, an emphasis on control acts to constrain subordinate leaders by focusing attention on those actions which can be quantified and

controlled, rather than focusing on creating opportunities for success.⁴⁰

IV. CONCLUSION

During the course of this study we have examined tactical command and control in both a historical context and as currently found in U.S. Army tactical C2 publications. From the study of German pre-World War II tactical doctrine and the documented field experience of German commanders and staff officers who participated in the hard fighting in southern Russia during late 1942 - early 1943, the command and control principles and techniques which characterized the successful German tactical operations of this period can be summarized as follows:

- o The fundamental nature of high intensity warfare will always entail a high degree of uncertainty and chaos. A key element in an army's ability to consistently achieve tactical success is a conscious decision to tailor its organization and tactical C2 procedures, and techniques to best take advantage of these constants of warfare.

- o Unit commanders must remain actively involved through their personal leadership in the conduct of battle. Commanders must be able to regularly position themselves, generally forward, to best gain an accurate understanding of the fighting and to provide the always necessary motivation and direction at critical times and places to insure the successful outcome of these engagements.

o Tactical unit staffs must remain small and highly effective. Tactical level staffs must be capable of operating with minimal control and supervision from their commander and be given the freedom and authority to take independent action, within the commander's intent, to support the accomplishment of the commander's mission. Tactical headquarters can remain small and fully mobile only if the commander's focus remains on command, not control, and staff officers retain the ability to solve tactical problems without a reliance on specialists.

o Equally important, subordinates must be capable and required to act with a high degree of individual freedom of action and initiative. Subordinate freedom of action must be granted within the constraints of their commander's intent and their own personal capabilities.

These criteria reflect a consistency between German prewar C2 doctrine and the requirements for high intensity warfare as experienced on the battlefields of southern Russia. The conscious decision to emphasize command-leadership vs. control-management did not always produce the most efficient tactical operations. Gen von Senger, Commander of the 17th Pz Div, writes that on several occasions forces which he believed were available to support his main effort had already been committed by his operations officer (Ia) to hold open a threatened flank.¹ This emphasis did, however produce consistently effective tactical organizations which remained focused on the only thing which can be truly evaluated in warfare - results.² A more centralized approach to C2 would certainly have made for a more orderly approach to fighting the battles of the Eastern Front, but at the cost of the

relentless drive and effective reaction which the German decentralized mission-oriented C2 consistently generated.

Against the principles and techniques which formed the basis of German tactical C2 success, the current U.S. Army tactical C2 doctrinal publications have been examined. From this examination, two principal concerns have been identified. First, there does not appear to be one well thought out and fully developed doctrine for tactical C2. The two primary doctrinal publications for tactical C2, FM 100-5 and FC 101-55, present a disjointed, and in many places internally inconsistent, concept of the U.S. Army's approach for dealing with the fundamental elements of war. While each publication recognizes the need for an emphasis on command, both documents and the current U.S. Army emphasis in research and procurement, in fact, appear to advocate control.

If the four principles, identified above, are in fact essential elements for tactical success, then the current U.S. Army efforts at an effective tactical C2 doctrine do not meet the requirements of modern high intensity warfare. The results of tactical unit performance at NTC seem to confirm this finding. Major shortcomings appear to be the deliberate attempt to control and foresee the events of battle and a lack of understanding of the critical interrelationship between leader and led.

While U.S. Army tactical C2 doctrinal publications recognize the ever increasing uncertainty, lethality, and chaos of the future battlefield, the current reliance on technology to provide answers to the needs and requirements of tactical C2 fails to acknowledge the current capabilities of our potential enemy and the limitations of our own C2 systems technology.

Implicit in these doctrinal frame works [C2] is the heavy reliance on accurate and timely intelligence and friendly status information without such a system the commander can not fight. ... The disturbing prospect here is that our command and control system can not be relied upon to be there [when needed]. The enemy can, for example degrade it sufficiently by destroying our very large vulnerable command posts or by using electromagnetic pulse, neutralizing our communications and computers. The system[s] of 1970, though more effective than the present system when all goes well, may be just as vulnerable to such attack. 3

Current U.S. Army tactical C2 doctrine also fails to recognize that war is essentially a contest between the independent wills of opposing commanders. It remains a battle between men, whose basic nature has shown little change throughout history. Gen Balck, echoing the findings of his father's World War I experiences, stated in 1979:

After all, war is never a technical problem only, and if in pursuing technical solutions you neglect the psychological and political, then the best technical solutions will be worthless. 4

Finally, U.S. doctrine fails to underscore the critical role the personal leadership of the commander plays on success in battle. Commanders must continually provide the motivation, guidance, and direction to allow their subordinates, whether staff officers or commanders of subordinate units, to develop the confidence and capability necessary to exercise the freedom of action they will, either intentionally or unintentionally, be given as a result of the ever increasing "frictions" of war.⁵ A personal presence does require forward leadership; however, forward leadership does not equate to the commander being continually in the most advanced positions. It does require a clear understanding of the commander's intent in the minds of the soldiers in the most forward positions and the physical presence of

the commander at the point he feels will be the most critical/decisive to the outcome of his fight.

.... but when the battle becomes hot, they must see their commander, know him to be near. It does not matter even if he is without initiative, incapable of giving an order. His presence creates a belief that direction exists, that order exists, and that is enough. 6

Although the faces, places, and means have changed since the end of World War II, the basic requirements necessary for successful tactical command and control remain the same. Success on today's battlefield will fall to the side with the ability to make rapid and concise assessments of the situation, the ability to make quick and accurate decisions with incomplete information, and the ability to rapidly execute those decisions, the same essentials the German Army found so necessary to achieve their tactical successes in southern Russia during early 1943. Advanced C2 technology provides the potential to increase the capability of the commander to successfully fight at the tactical level. To make this potential a reality, the U.S. Army must develop a well thought out and realistically based C2 doctrine. Without such a doctrine, the current disjointed and inconsistent approach to tactical C2, evidenced at the NTC, will prevent the development of decisive combat power at the time and place of our choosing, so necessary to being able to "fight out numbered and win". A comprehensive doctrine must be developed now, there will no time to correct and survive during the next war (see Appendix D).

From this review of tactical C2 requirements, it is evident that only a fully integrated, organizational and doctrinal command and control system, focused on command-leadership and encompassing the best features of the German concept of "Forward Command" will meet the C2

requirements of the future high intensity battlefield. To make this system work, the Army must continue to develop, field, and incorporate the advances in new technology into our tactical C2 doctrine and procedures. We can never totally anticipate the requirements of the battlefield; however, we must be sure that our doctrine, organization, and C2 procedures have taken full advantage of the successes and failures which the lessons of history provides us.⁷ The heart of our C2 system must be built around historically proven principles, procedures, and doctrine rather than an over-reliance on technology.

Appendix A. C2 Operational Philosophies

C2 OPERATIONAL PHILOSOPHIES*

	<u>CONTROL ORIENTED</u> <u>(HIGH TECHNOLOGY-LOW RISK)</u>	<u>COMMAND ORIENTED</u> <u>(AUSTERE TECHNOLOGY-HIGH RISK)</u>
<u>STRATEGY:</u>	Non-relational: Attrition, physical destruction through use of massive firepower.	'Relational': Maneuver, outflanking the enemy, exploiting weakness in enemy's organization and C2 to disrupt original plans.
<u>TACTICAL ORIENTATION:</u>	Defensive. No pre-emptive option.	Offensive. High probability of pre-emptive option.
<u>TECHNOLOGICAL ORIENTATION:</u>	High investment in hardware technology. Technological substitution: Sophisticated technology for manpower.	High investment "Human Technology": Tactics, training, and combat readiness procedures.
<u>METHOD OF OPERATION:</u> (PROBLEMS)	Large formations; "orchestrated armadas". Complexity, coordination, lack of flexibility.	Small formations. Coordination problems only.
<u>PLANNING STYLE:</u>	Detailed centralized planning, complexity and coordination require rigid adherence to pre-planned missions.	Flexible mission planning, details delegated to operational commanders.
<u>C2 PATTERNS:</u>	Detailed centralized control. Restrictive and limited autonomy and flexibility to operational commanders. Aversion to improvisational tactics and procedures.	"Forward Command", maximum flexibility and delegated authority to operational commanders, strong emphasis on capacity to improvise.
<u>THRESHOLD OF TOLERANCE TOWARDS RISK AND UNCERTAINTY:</u>	Low. (Low risk)	High. (High risk)
<u>OVERALL COST:</u> (*)	High.	Moderate to low.

* Adapted from Raanan Bissin's "Command, Control, and Communications Technology: Changing Patterns of Leadership in Combat Organization", p. 131.

Appendix B. AUFTRAGSTAKTIK

AUFTRAGSTAKTIK

The German concept of Auftragstaktik best expresses the decentralized mission-oriented command and control style recognized as so critical by the Wehrmacht in both its tactical doctrine and field experience. Today there are many within the US Army who make this term synonymous with "mission-type" orders. This "one liner" does not, however capture the full intent the term originally conveyed. The following explanation of Auftragstaktik by Field-Marshal Kesselring in his "Small Unit Tactics: Manual for Command and Combat Employment of Smaller Units", MS # P-060b, p. 29, more completely describes its original meaning:

The command [order] will give to its recipients the necessary information to which extent he and the troops assigned to him are to participate in the execution of the intentions of the superior command [er]. If the executing party is to be partner in a plan strictly organized as to time, locality, and procedure, the command [order] must reflect the characteristics of a strictly organized action and accordingly contain all details. Such a command [order] is necessary also if the subordinates have a low grade of training only. If, however, the commander believes his subordinates capable of finding their own solution of [to] a mission, having the necessary training, experience and fighting qualities, he will content himself with stating the purpose and objective of his command [order] and limiting further particulars of the execution to the elements absolutely necessary for coordinating neighboring, supporting, or supported troops as to time and locality. This last mentioned so called Auftragstaktik is apt to induce all commanders and combatants to join in thinking, to raise their self-confidence and their sense of responsibility, and to secure in case of changes of the situation, a quick reaction of the extreme points of the combat instrument [unit] according to the intentions of the

command [order]. On the other hand, a formation accustomed to wait for a command [order] or even demand it for each action, will in its irresoluteness freeze to inactivity.

The command [order] must leave room for one interpretation only, particularly if several solutions are possible, and must be clear enough as to show the full responsibility taken by the commander. The subordinate will then be full of confidence and exhaust all possibilities to carry it out as well as possible. The shorter the command [order], the clearer it will be. It must not leave a loophole for the receiver of the command [order] to evade its intentions or to transgress them, but within the scope of the command [order] he must have the opportunity to develop his own initiative.

It can be seen that Auftragstaktik, as described by Field-Marshal Kesselring, goes far beyond simply "mission-type" orders. Inherent within this concept of C2 are responsibilities for both the giver and receiver of orders. It must be also kept in mind that Auftragstaktik, as practiced by the German Army of World War II, was effective only within a broader system of C2. Without a continually updated understanding of the subordinate's capabilities and limitations and the commander's realistic assessment of the battlefield situation upon which to base his "mission-type" orders, Auftragstaktik would not have been effective. This type of mission-oriented C2 also presupposes both a uniformity in understanding of tactical concepts and a reliability of subordinate action. For a description of the contemporary German description of Auftragstaktik, see LTC Walter von Lossow, "Mission -Type Tactics versus Order-Type Tactics", Military Review, June 1977.

Appendix C. Definitions of C2

Definitions of C2

The discussion of command and control has produced a wide variety of definitions and related terminology. The following definitions are provided from a selection of military publications:

JCS Pub 1:

The exercise of authority and direction by a properly designated commander over assigned forces in the accomplishment of the mission. Command and control functions are performed through an arrangement of personnel, equipment, communications, facilities, and procedures which are employed by a commander in planning, directing, coordinating, and controlling forces and operations in the accomplishment of the mission.

FM 100-5, Operations (DRAFT), 1985: (p. 2-21)

Command and control is the exercise of command, the means of planning and directing campaigns and battles. Its essence lies in applying leadership, making decisions, issuing orders, and supervising operations. In practice, it concerns the organizations, procedures, facilities, equipment, and techniques which facilitate the exercise of command.

FM 100-5, Operations, 1982: (p. 7-3)

Command and control is the exercise of command, the means of planning and directing campaigns and battles. Its essence lies in applying leadership, making decisions, issuing orders, and supervising operations. At the operational level it concerns the organizations, procedures, facilities,

equipment, and techniques which facilitate the exercise of command.

FC 101-55, Corps and Division Command and Control, Feb 1985: (p. 3-1)

Command and control synchronizes and coordinates combat power on the battlefield and provides the direction to fight. The command and control system provides the framework through which the commander communicates his intent to subordinates and supervises execution. Without effective command and control the unit will fail to perform its mission.

Command and control are two different processes, not one.

- o Command is a process by which the will and intent of the commander is infused among subordinates. This process is directive; its premise is reliable subordinate behavior.

- o Control is a process by which subordinate behavior inconsistent with the will and intent of the commander is identified and corrected. This process is regulatory; its premise is unreliable subordinate behavior. Unreliable behavior in this context does not normally stem from deliberate disobedience. It will normally be inadvertent, resulting from perspectives of the battlefield, inattention, or a lack of understanding of the mission or the commander's intent -- or the fog of war.

FC 71- 100, Armored and Mechanized Division and Brigade Operations, May 1984: (p. 3-1)

Command and control is the exercise of authority and direction by a properly designated commander over assigned forces in the accomplishment of his mission. Command and control functions are performed through an arrangement of personnel, equipment, communications facilities, and procedures which are employed by a commander in the planning, directing, coordinating, and controlling of forces and operations to accomplish his mission. Command and control (C2) involves the formulation of estimates, plans, and orders; the collection and distribution of necessary information; and the direction of operations in progress. It also entails the employment of command and control and

communications facilities and the supervision of assigned and subordinate staffs.

AirLand Battle 2000: (Appendix A, Command and Control)

OPERATIONAL CONCEPT:

1. Command and Control (C2) is the exercise of authority and direction by a properly designated command over assigned forces to attain victory on the AirLand Battlefield of the 21st century. C2 is exercised to employ forces and resources in such a way as to effect the collapse of the enemy's ability and will to continue to fight. The C2 system acts as a single entity and consists of the commander, his staff, and supporting elements such as communications and intelligence.

2. The C2 system has as its task to -

- Receive and analyze mission directives
- Gain and analyze information
- Estimate
- Plan
- Make decisions
- Prepare for operations
- Monitor, control, and coordinate operations

A good selection of reprinted articles relating to command and control can be found in FC 101-34, Command and Control on the AirLand Battlefield, June 1984.

Appendix D. Command and Control Theory

COMMAND and CONTROL THEORY

Before the U.S. Army can develop a meaningful tactical command and control doctrine, it must first develop a comprehensive command and control theory. Any theory for command and control must be closely related to a theory of war itself. Carl von Clausewitz based his concept of war on three interrelated elements: the dominant role a rational national policy makes in shaping and controlling the final form war adopts, the always present element of chance and friction, and the intrinsic violence of war. Using Clausewitz's theory of war as a base, a meaningful theory of C2 can be developed.

The dominance national policy plays in war dictates that military commanders will be directed to accomplish specified objectives in order to achieve specific political aims. These objectives are further refined as strategic, operational, and tactical missions. The end result for any command and control doctrine must be an ability to transmit the commander's decision and guidance to enable his subordinates to accomplish these assigned missions. If wars were fought only in theory or on game boards, C2 doctrine could remain solely a means to pass along the commander's orders and intent to his subordinates as a way of assigning subunit missions. Warfare does not exist in such environments. Clausewitz includes two equally significant elements to complete his theory of war which must therefor be included in any C2 theory - chance and violence.

Fundamental to any theory of C2 must be a requirement to identify, prevent, and correct those actions (frictions) which will or have, if left to themselves, reduce or prevent subordinate's ability to accomplish his commander's mission. It must attempt to identify and reduce the impact the frictions of war have as they effect the subordinate's ability to accomplish his assigned mission.

The final element that any theory of C2 must encompass is the impact of the intrinsic violence of war. Essential to any C2 doctrine must be a requirement to reduce the psychological effects modern weapons and weapons systems produce on the battlefield. The increasing isolation of the individual and his unit resulting from the increased dispersion necessary to attempt to survive these weapons, combined with the tremendous shock effect produced by the noise, confusion, and mass casualties resulting from their use - effects always increased from lack of sleep and physical fatigue - have placed an ever increasing importance on this aspect of command and control, one too often overlooked.

Any theory for C2 must be based on the interaction of these three fundamental elements of war. Additionally, because it is concerned with accomplishing specifically assigned missions using specific forces and in a specified time and space, it must involve the application of military art. Using this reasoning, a theory of C2 might be described as: the art of transmitting the commander's will to accomplish assigned missions while attempting to reduce the impact of chance/friction and the psychological effects of the battlefield environment. Its essence

lies in applying leadership, decision making, and supervision of actions resulting from those decisions. In practice it is exercised through developed unit cohesion, commonly understood doctrine applied as a result of intensive training and knowledge of tactical drills, decentralization for mission execution, forward command presence, proper incorporation of technology, and effective unit/staff organization. *

WARFARE

Theories of: WAR  C2

Extension of policy. Establishment of specific military objects to meet policy aims:

Means to implement the the commander's will. Pass orders and intent to subordinates to accomplish commander's assigned mission. (Direction)

Chance/friction;

Identify, prevent, remove obstacles and events which will/have reduced or prevented the subordinate from accomplishing commander's mission. (Coordination)

Violence:

Reduce the psychological effects of the battlefield on subordinate leaders and soldiers. (Motivation)

* See Maj James H. Wilibanks, USA, "Airland Battle Tactical Command and Control: Reducing the Need to Communicate Electronically in Command and Control of Combat Operations at the Tactical level", (Thesis for the

Command and General Staff College, Fort Leavenworth, KS), 1964 for a description of the role unit cohesion, commonly understood doctrine, decentralization of C2, forward command presence, proper incorporation of technology, and effective unit/staff organization have historically played in successful C2.

ENDNOTES

INTRODUCTION:

1. Michael Howard, et al., Carl von Clausewitz On War, (Translated by M. Howard and Peter Paret, Princeton, NJ: Princeton University Press, 1976), p. 104.
2. Ibid, p. 101.
3. Martin van Creveld, Command, (Cambridge, Mass:Harvard University Press, 1985), p. 269.
4. Frederick W. Timmerman Jr., LTC USA, "Of Command and Control and Other Things", (Army Magazine, May 1985), p. 58.
5. Richard Simpkin, Human Factors in Mechanized Warfare, (Oxford: Brassey's Publishing, Limited, 1983), p. 154; also Raanan Gissin, "Command, Control, and Communications Technology: Changing Patterns of Leadership in Combat Organizations", (Dissertation for Doctor of Philosophy in Political Science, University of Syracuse, 1979), p.56. Gissin writes: "Whether decision thresholds are flexible or rigid is also a function of the style and general operational philosophy of planning military operations in the organization. In organizations in which detailed planning of operations is centralized at the top, decisions thresholds for combat echelons are likely to be rigidly structured."
6. James Stokesbury, A Short History of World War II, (New York: William Morrow and Company, Inc., 1980), p. 28.
7. Ardant du Picq, Col, French Army, Battle Studies: Ancient and Modern Battle, (Translated by Col J.N. Greely, USA and Maj R.C. Cotton, USA, Harrisburg, PA, 1946), p. 109. Writing prior to the Franco-Prussian War, du Picq wrote: "But one thing does not change, the heart of man. In the last analysis, success in battle is a matter of morale. It is rarely taken into account; and often strange errors are the result." This same idea was repeated in 1922 by the German writer Gen Wilhelm Balck who, after the experiencing the harsh realities and attempts by both Allied and German armies to deal with the growing lethality of "modern" weapons and tactics, wrote: "But let us not believe that at any time any technical inventions, even if ever so enormous, will be able to change even the very least bit of the nature of war. It is true that they may change the form, but they will never touch war's inner core [man]". Gen Wilhelm Balck, Development of Tactics-World War, (Translated by Harry Bell, Fort Leavenworth: General Service Schools Press, 1922), p. 14. There is little to indicate that the nature of man has changed since 1922.
8. To attempt to list all the available definitions of C2 would consume entirely too much space. A listing of selected military definitions have been provided at Appendix C. The current FC 101-55 will be examined in some detail during the discussion of current US doctrine. LTC Robert Schmidt discusses the failings of current definitions of C2 in his recent article: "A Doctrine for Command", (Military Review, Nov 1985, pp. 45-47). JCS Pub 1 defines C2 as:

"The exercise of authority and direction by properly designated commanders over assigned forces in the accomplishment of his mission ..."

9. This definition of C2 combines the current definition of C2 in FM 100-5, Operations (DRAFT), (1985), pp. 2-21, 2-24 and fundamental elements required for C2 taught to the pre- World War II German Army as stated by Gen Guenther Blumentritt in MS 8 B-303: "Technique of Command". (1947), p. 2. The current FM 100-5 includes equipment in its definition of C2. While equipment is important to C2 it remains but one of several means to implement the commander's will in the pursuit of his assigned objective. Equipment must be adapted to meet the commander's requirements.

10. FM 100-5, Operations (Draft), p. 2-9.

11. CPT Jonathan House, USA, Toward Combined Arms Warfare: A Survey of 20-Century Tactics, Doctrine, and Organization, (US Army Command and Staff College. FT Leavenworth, KS. CSI Research Survey No. 2, Aug 1984), p. 188.

12. According to Martin van Creveld, German officers confronted by a problem ask what is the core of the problem while American officers, given the same problem, focus on its component parts; many times losing site of the problem itself. Creveld, Fighting Power, p. 165.

II. GERMAN TACTICAL C2 AND ITS ROLE IN THE WEHRMACHT'S SUCCESSES ON THE EASTERN FRONT, NOVEMBER 1942 - MARCH 1943.:

1. Trevor N. Dupuy, Col USA, Ret, A Genius for War: The German Army and General Staff 1807-1945, (Englewood Cliffs, NJ: Prentice-Hall, 1978), p. 253. Dupuy found that throughout the war German ground forces regularly inflicted casualties at a 50% higher rate than by opposing British and American units and at a 300% higher rate than by opposing Russian units. Dupuy states that one German division was a match for at least three Russian divisions of comparable size and fire power.

2. Heeresdienstschiffen 300, Truppen Ffuhrung (German Field Service Regulations: Troop Leading) 1933, (Translated by Command and General Staff School Press, Fort Leavenworth, KS, 1936), p. 1 para 3.

3. Gen Guenther Blumentritt, MS 8 B-303: "Technique of Command", (1947), p. 2.

4. Dupuy, p. 304 and selected paragraphs from the Truppen Ffuhrung:

o willingness to assume responsibility:

p. 1 para 9: "In all situations every leader must exert, without evasion of responsibility, his whole personality. Willing and joyful acceptance of responsibility is the distinguishing characteristic of leadership."

o freedom of action and initiative:

p. 1 para 10: ".... The emptiness of the battlefield demands independently thinking and acting fighters, who, considering each situation, are dominated by the conviction, boldly and decisively to act, and determined to arrive at success."

p. 2 para 15: ".... The first demand in war is decisive action. Everyone, the highest commander and the most junior soldier, must be aware that omissions and neglect incriminate him more severely than the mistake of choice of means."

o mutual trust and confidence:

p. 2 para 12: "The leaders must live with their troops, participate in their danger, their wants, their joys, their sorrows. Only in this way can they estimate the battle worth and the requirements of the troops. ... From such conduct the feeling of real comradeship develops, which is just as important between the leaders and men as between the men themselves."

o focus on mission:

P. 4 para 36: "... The mission and the situation form the basis of the action.

The mission designates the objective to be attained. The leader must never forget his mission "

p. 16 para 73: "An order shall contain all that is necessary for the lower commander to know in order for him to execute independently his task. It should contain no more. Correspondingly the order must be brief and clear, decisive in tone and complete, adopted to the understanding of the receiver and according to conditions, to his peculiarity. The commander must never fail to place himself in the position of the receiver."

5. Truppen F hrung, p. 4 para 36: "Obscurity of the situation is the rule. Seldom will one have exact information of the enemy. Clarification of the hostile situation is a self-evident demand. However, to wait the tense situation for information, is seldom a token of strong leadership, often weakness." See also Clausewitz, p. 117.

6. Ibid:

p. 16 para 109: "The personal effect of the commander on the troops is of great importance. He must be near the fighting troops."

p. 16 para 111: "The division commander belongs with his troops."

p. 17 para 115: "In pursuit the commander must be further forward. His appearance among the most advanced elements spurs the troops to the greatest exertions."

p. 17 para 116: "... Should new combat impend after earlier combat has been broken off, the division commander betakes himself to the areas of the new line of resistance ... "

p. 58 para 323: "Every attack requires coordination, it is not permitted to fall down in individual attacks. ... "

p. 63 para 340: "The senior commander coordinates the battle activity of the tanks with the cooperation of the other armies."

7. Maj Gen Bronsart Schellendorf, Chief of Staff Guard Corps, The Duties of the General Staff, (Translated by W.A. Hare. London: C. Kegan, Paul & Co. 1877), p. 8. Gen Schellendorf quotes Clausewitz.

8. Schellendorf, p. 4. Schellendorf undertook to write a manual for the developing German General Staff. The foundation he laid with this "manual" and his organization of the General Staff became standard practice within the German army. The 1933 Truppen F hrung, p. 17 para 118 states:

The correct combination of the staff and the suitable distribution of tasks are of especial importance. The higher staffs must function with [in] the prescribed strength.

At the command post precautions must be taken and strict regulation of work must be exercised in order to guarantee a quiet and sure leadership and to avoid placing the burden of details on the commander.

9. Gen Hellmuth Reinhardt, MS B P-139: "Size and Composition of Division and Higher Staffs in the German Army", (1954), p. 21, 49. MS B P-139 p. 74 states the authorized strength for a Panzer Division Headquarters in 1939 as: (Off/civilian officials/EM)

HQ Staff	114	(17/14/82)	w/o a signal Det
Map Sec	7	(1/0/6)	
Mscr Plt	46	(1/0/45)	
MP Det	37	(1/0/36)	

Total - 204 (21/14/169)

Div HQ Staffs composed 0.65% of the total division strength compared with 1.26% of the total strength of an American 1942 armored division. HQ staffs were divided into three branches: Tactical group, Support & Admin branch, and Adjutant branch. In 1939 the tactical group of a Pz Div was authorized a strength of 6/0/6. A full discussion of the duties of each branch and individual duty descriptions for each officer's position can be founded in MS B P-139, pp. 2-5.

The 1939 authorized strength for a Panzer Corps headquarters (MS B P-139, p. 93):

HQ Staff	184	(16/11/77)	w/o a signal Det
Map Sec	16	(1/0/15)	
Mscr Plt	46	(1/0/45)	
MP Det	37	(1/0/36)	

Total - 203 (19/11/173)

* Crevel, Fighting Power, p. 52.

10. Crevel, Fighting Power, p. 164.

11. MS B B-303, p. 3.

12. DA Pam 20-269, Small Unit Actions During the German Campaign in Russia, (July 1953), p. 3. Despite these impressive initial successes, the war in Russia had already forced changes to German Army organization and command selection procedures. Because of the heavy physical demands the extended fighting on the Eastern Front placed on lower level commanders, the Germans had to revise their standards for selection of lower echelon leaders. The older long service officers broke down or became sick under conditions of the prolonged campaign and constant exposure to the elements. As a result the average age for commanders was lowered and physical requirements raised. Prewar training and combat experience had to be replaced by youth and hoped for innovation.

13. Gen Frido von Senger und Etterlin, Neither Fear Nor Hope, (Translated by George Malcolm. New York: E.P. Dutton and Company, 1964), pp. 69, 72, 78, 84-87. During this same period all German units on the Southern Wing suffered equally. Gen Balck, commander of the 11th Pz Div, reported having a

total of only 25 armored fighting vehicles and Gen von Senger's son, a Lt in the 7th Pz Div states: "... if the 7th Pz Div in the beginning of the year (1943) had been in an excellent state, by the end of the year we were 1000 km to the rear, in a bad situation and in bad condition". See also Paul Carell, Scorched Earth: The Russian - German War, 1943-1944, (Translated by Ewald Osers. New York: Ballantine Books, 1966), p. 123, 129 and comments by Gen Dr. Ferdinand von Senger und Etterlin at the 1985 Art of War Symposium, Carlisle Barracks, Pa.

14. Carell, p. 214.

15. Maj Gen Friedrich von Mellenthin, NATO Under Attack, (Durham, NC: Duke University Press, 1984), p. 5.

16. See references in note 6 Section II.

17. Gen Fredrick Schultz, "Selected German Operations on the Eastern Front Vol III: Reverses on the Southern Wing (1942-1943)", (Art of War Colloquium, U.S. Army War College, 1983), p. 288.

18. Gen von Senger, Neither Fear Nor Hope, p. 83. See also Gen Fritz Wentzell and Gen Frido von Senger U. Etterlin, "Selected German Operations on the Eastern Front VOL II: Combat in the East and Panzer Retreat to Counteroffensive", (Art of War Colloquium, U.S. Army War College, 1983), p. 129. So important was the need to gain clear information from personal observation of the battlefield and from the commanders who were fighting the actual battle that Gen Balck, while later commanding the 48 Pz Corps, would send his chief of staff to the front to maintain an accurate understanding of the situation and to keep alive the "intimate contact which should exist between the General Staff and the fighting troops". Maj Gen Friedrich von Mellenthin, Panzer Battles, (Translated by H. Betzler. Norman, OK: University of Oklahoma Press, 1955), p. 252.

19. Taped conversation with Gen Balck, (Columbus, Ohio: Battelle-Columbus Laboratories), Jan 1979, p. 58.

20. Schultz, "Selected German Operations On the Eastern Front VOL III", p. 289.

21. Col Rothe's comments during the 1985 Art of War Symposium. See also von Senger, Neither Fear Nor Hope, p. 82 and comments by Gen Niepold, Commander 12th Pz Div, during the 1985 Art of War Symposium and comments by Gen Schultz, "Selected German Operations on the Eastern Front VOL III", p. 255.

22. Gen von Senger, Neither Fear Nor Hope, p. 83. Gen von Senger writes the troops had "confidence because of the personal presence of the commander not only when leading a battle group but whenever the situation became critical". Neither Fear Nor Hope, p. 102

23. Balck, interview Jan 1979, p. 56 see also p. 49. Also Field-Marshal Kesselring, MS # P-060b: "Small Unit Tactics: Manual for Command and Combat Employment of Smaller Units", (1951), p. 16.

24. Comments by Col Stoves, staff officer 1st Pz Div, during the 1985 Art of War Symposium. See also MS # P-060b, p. 35.

25. Statement by Gen von Senger, "Selected German Operations on the Eastern Front VOL II", p. 125. Gen von Senger writes further: "This practice (being so far forward) was justified by the fact that the forward echelon's operations were critical to the success of the advance. In any case, I could still control the movement of my other forces, even in forward positions. In principle, the division commander should refrain from infringing on the authority of a subordinate commander. It is

commander should refrain from infringing on the authority of a subordinate commander. It is permissible; however, for him to give on-the-spot advice or by issuing an oral order placing individual units temporarily under his direct command for the performance of special missions," p. 127. See also MS B C-879, p. 41.

24. Balck, Jan 1979, p. 20: "The radio allowed tank units to be maneuvered with swiftness and flexibility".

27. MS B P-139, p. 49. See also note 7 Section I.

28. Ibid, p. 10. German staffs organized into three groups/branches: Tactical group, Supply and Administration branch, and Adjutant branch see note 7 Section II for additional information on staff organization.

29. Ibid, p. 51. Quoting further from Gen Halder (Chief of Staff for the German Army until 1942):

A small body of highly qualified persons able to inform themselves on all points and to enforce the will of their responsible commander is more effective and valuable than a large bureaucratic staff.

The most serious menace to an intellectually unimpeded and versatile conduct of operations, namely, excessive centralization and its willing and exacting servant, statistics. (p. 60)

30. Ibid, pp. 16, 52. Tables of organization were continually checked to insure that minimum mission essential strengths were maintained. When ever possible, losses in staff positions were rapidly made up. Despite intense efforts to keep staff size small, increases in both authorized and actual strengths did develop. Expansion of staffs for specific missions were authorized by higher headquarters but were closely monitored to insure they did not become permanent. Additionally authorized strengths were increased by 1944 as a result of the increasing demands of fighting a war on the extended distances of Russia: (Off/civilian officials/ BM)

Pz Unit Authorized Staff Strengths

	<u>1939</u>	<u>1944</u>
Divs: Hq Staff	114 (17/14/82)	159 (20/9/130)

Tactical group in 1944 was authorized a strength of: 8/0/6

Corps: Hq Staff	203 (16/11/77)	244 (30/11/203)
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Tactical group in 1944 was authorized a strength of: 16/0/10

Gen Balck writes of his 11th Pz Div: "officers, NCO's, drivers, radio operators, clerks, etc., it was about 50 people. The less there were the less aggravation." Balck, in review July 1979, p. 26.

A full breakdown and an explanation of increases in authorized staff strength for division and corps headquarters can be founded in MS B B-303, pp. 76-107.

a Strength does not include the Map section, messenger section, MP detachment, or headquarters signal unit. Total for a Pz Div Hq in 1944, including these sections and detachments - 638.

31. Ibid, p. 21.

32. Ibid, p. 21. See also comments by J.F.C. Fuller, Generalship: Its Diseases and Their Cure, (Harrisburg, Pa: Military Service Publishing Co., 1936), p. 66.

33. Gen von Senger, "Selected German Operations on the Eastern Front II", p. 128. Gen Balck describes the commander-staff procedure in 11th Pz Div as: "In my system the staff would work quietly (in the rear) and the commander would be at the focal point and exert his moral power. ... I would command from the front by radio and could always be at the most critical points of the action. I would transmit my commands to the chief of staff and then it was up to him to make sure that they were passed on to the right units and the right actions were taken. This practice gave us fantastic superiority over the enemy - agility and initiative the key". Balck, "Generals Balck and von Mellenthin on Tactics: Implications for NATO Military Doctrine", (McLean, Va: BDM Corporation, 1980), p. 50 and interview with Gen Balck, Jan 1979, p. 78. Also Col Sto es, relating the operation of the 1st Pz Div in Feb 1943 during the 1985 Military Art Symposium, states: "Our commanders led in their command carrier, riding behind the combat group in the main effort and the chief of staff remained at the headquarters. They were in direct contact by radio or wire." See also von Senger, Neither Fear Nor Hope, p. 82.

34. von Mellenthin, Panzer Battles, p. 184 also Balck, "Generals Balck and von Mellenthin on Tactics", p. 50 and Gen Hermann Balck, Ordnung in Chaos, (Osnabruck, Germany, 1980), p. 318.

35. Interview comments by Gen Balck, Jan 1979 p. 57 and April 1979, p. 25. See also Blumentritt, MS # B-303, p. 12. Gen Blumentritt writes: "The dead, written word can never have the same effect as that which is spoken personally."

36. Carell, p. 207. Additionally, MS # C-79 provides two detailed examples of the commander - staff interaction in true copies of both written and recorded verbal combat orders given by a German division commander during operations in Russia.

37. See note 14 Section II.

38. Schultz, "Selected German Operations on the Eastern Front III", p. 252. Gen Schultz describes the condition of the XLVIII Pz Corps upon his assumption of command in Dec 1942: "One division consisted of a motley crew of trained soldiers, supply units, men going on or returning from leave, road and bridge construction engineers, police, railway operating units, etc.. Officers were like wise some what of a motley bunch. They were neither trained or equipped for major action. Yet, they had fought well." The commander of this ad hoc unit had been the chief of officer personnel records for the 6th Army who had been awaiting an aircraft to return to Stalingrad when the pocket fell. Dupuy, A Genius for War, p. 286 writes: "Close examination of German operations in World War II reveals - with occasional lapses and exceptions - the same kind of cool, competent, bold, imaginative, opportunistic leadership on the part of practically all German division, corps, army, and army-group commanders, in success as well as adversity, defense as well as attack."

39. Gissin, p. 157.

40. Schultz, "Selected German Operations on the Eastern Front III", p. 289. See also MS # P-060b. Gen Balck writes: "The success of Auftragstaktik presumably rests, at least in part, on the knowledge by

the subordinate of the higher commander's concept of operations and objectives. Subordinates must be able to choose sensible courses of action within the framework of the overall scheme", interview with Gen Balck, Jan 1979, p. 18, "After all combat leadership is largely a matter of psychology. As much as possible, I tried not to tell my people what to do. As long as I saw a man was sound, I let him do things his own way, even if I would have ^{to} do them differently," interview with Gen Balck, July 1979, p. 20.

41. Balck, Ordnung im Chaos, pp. 17, 22. See also Balck, interview July 1979, p. 18.

42. MS # P-133, p. 13. See also p. 7.

43. Schultz, "Selected German Operations on the Eastern Front III", p. 289.

44. von Senger, Neither Fear Nor Hope, p. 123. See also Gen Hermann Balck, Ordnung im Chaos, p.318 and Col Rothe, comments 1985 Art of War Symposium.

45. Gen von Senger also writes: "The division commander endeavored to keep a controlling hand on the course of the battle by creating reserves independently of the front line troops, by flexible regrouping of available forces and [when required] by direct tactical control of armored groups." Neither Fear Nor Hope, p. 101. See also material at note 26, German Experience.

46. Gen Gallenkamp, Commander 78th Inf Div, MS # C-079, p. 41.

47. MS # P-133, p. 8-9 states: "War is full of imponderables and surprises. The understandable effort to obtain as complete as possible a picture of the enemy and his intentions must not impair the ability to act boldly in situations which are not clarified. What matters is the mission and the will to carry it out successfully. Flexibility in the selection of means and in execution is often necessary." and on p. 15: "There is no limit to the variety of situations which may occur in war. They change quickly and frequently and seldom is it possible to foresee them. Imponderable factors, among other things, exercise decisive influence on the course of events. The basic issue is the impact of one's own will upon the independent will of the enemy." Finally p. 17: "At the climax of an engagement each side may regard its mission as impossible of accomplishment, ... victory lies with the side that carries through with a fresh impulse of will."

48. Gissin, p.445.

49. von Mellinthin, Panzer Battles, p. 252 and note 18 Section 11 by Gen von Senger. Also comments by Gen Balck during April 1979 interview, p. 33.

50. Van Crevel, Command, p. 193.

III. CURRENT US ARMY TACTICAL C2 DOCTRINE:

1. FM 100-5, Operations (DRAFT), (1985), p. 1-3. See also USATRAODC, "AirLand Battle 2000", (1982), p. 1 and FC 101-35, Corps and Division Command and Control, (Jan 1985), p. 1-3.

2. Ibid, p. 2-22.

3. FC 101-55, p. 3-1, 3-2.
4. FM 100-5, p. 2-21.
5. FC 101-55, p. 1-12 and FM 100-5, p. 2-23.
6. Ibid, p. 2-9.
7. FM 100-5, p. 2-24. Quote continues by indicating that if unforeseen situations develop commanders "should understand the purpose of the operation well enough to act decisively". The concept is good, the question is not if but when situations will unexpectedly arise.
8. TRADOC PAM 525-2, Tactical Command and Control, (June 1980), p. 9. Although outdated this PAM still reflects current doctrinal thinking see FC 101-55, pp. 2-5, 2-8.
9. FC 101-55, p. 3-2.
10. Ibid, pp. 1-4, 3-2 and FM 100-5, p. 2-23.
11. See MS # P-133, pp. 8-17 and Clausewitz, p. 117. Additionally, Gen Niepold comments, during the 1985 Military Arts Symposium reference information reporting, that: "In battle such incorrect reports are frequently given. I myself as a commander of a Bundeswehr brigade, division, and corps, have strictly demanded, twice or three times daily to report the location of the outer check-points of battalions, brigades, and divisions according to the personal inspection of the appropriate commander. I then hoped that the situation-map will be 80% correct."
12. Schultz, James B., "PLRS, PJH to Improve Tactical Battlefield Operations", (Defense Electronics, Jan 1984), p. 61. Schultz, p. 71, anticipates the cost to field ~~just~~ the JTIDS will reach 4 billion by the 1990's. A number of additional articles could be sighted, in fact the majority of published material on C2 deals with the increased ability for current and projected C2 technology to expand the commander's ability to control the battlefield, see FC 101-34 for a selection of reprinted articles on C2.
13. Maj James Willbanks, USA, "Airland Battle Tactical Command and Control: Reducing the Need to Communicate Electronically in Command and Control of Combat Operations at the Tactical level", (Thesis for the Command and General Staff College, Fort Leavenworth, KS, 1984), p. 143.
14. Schultz, Defense Electronics, (Jan 1984), p. 62.
15. Gen Halder's comments on motivation being the key personal responsibility of unit commanders, MS # P-139, p. 50.
16. FM 100-5, p. 2-9. The entire quote reads: "The most essential element of combat power is competent and confident leadership." See also the definition of C2 FM 100-5, p. 2-21.
17. FC 101-55, p. 3-2.
18. Ibid, p. 2-5.
19. Carell, p. 129.

20. FC 101-55, p. 2-5. FC 101-55 identifies eight critical functions for the commander: commands the force, knows the situation, assigns missions, allocates means, makes decisions, directs and synchronizes forces, sustains forces, and motivates subordinates. Motivation is described as an integral part of command, see also FM 100-5, p. 2-9. To accomplish this function FC 101-55 states the C2 system must allow the commander to motivate his subordinates by: following enemy activity throughout the area of interest, predicting enemy courses of action, monitoring friendly units two echelons below his own headquarters, communicating with principal subordinates, directing the attack of enemy follow-on forces, identifying and disposing of bypassed or uncommitted enemy forces, reacting in a timely ^{way} ~~manor~~ to changes on the battlefield, and anticipating and acting on opportunities (underline added).

21. MS # P-139, p. 50.

22. FC 101-55, p. 2-8.

23. Ibid, p. 3-13. Methods recommended include: a current situation map, status boards and charts, and automated staff support systems. Noticeably absent is input from personal observation.

24 Ibid, p. 3-6.

25. FM 100-5, p. 2-24 and FC 101-55, p. 3-3. See also FC 101-55, p. 1-11.

26. See note 4 German experience, Section II.

27. This difference in emphasis is not recent, Martin van Creveld reaches the same conclusion in his book Fighting Power, pp. 37-40.

28. FM 100-5, p. 2-22.

29. In the interest of readability the individual elements of tactical unit staff operations have not been individually noted. They all have been taken from chapters two and three of FC 101-55, specifically pp. 2-6, 2-10, 3-5, 3-6, 3-10, and 3-16. Appendices A and C of FC 101-55 provide a model for the organization of a standard corps and heavy division headquarters staffs. The following extracts from these Appendices are provided. Headquarters strength figures do not include headquarters signal support:

	<u>Corps</u>	<u>Div</u>
TAC CP	32	29
Main CP	290	155
Total:	302	184

TAC CP sizes can be compared against the size of the German tactical group given at note 9 German experience, Section II.

30. FM 100-5, p. 2-22.

31. Interview comments by Gen Balck, Jan 1979 p. 57 and April 1979, p. 25. See also Blumentritt, MS # B-303, p. 12. Gen Blumentritt also writes: "The dead, written word can never have the same effect as

that which is spoken personally." For an example of a short effective verbal field order see Field-Marshal Manstein's order to the 5th (Viking) SS Pz Div note 36 German experience, Section 11. Additionally, MS # C-79 provides two detailed examples of the commander - staff interaction in true copies of both written and recorded verbal combat orders given by a German division commander during operations in Russia.

32. FM 100-5, pp. 1-11, 2-23, and 2-55; also FC 101-55, p. 1-4.

33. Romjue, "From Active Defense to AirLand Battle", (Historical Office, United States Army Training and Doctrine Command Fort Monroe, Va., June 1984), p. 59.

34. FC 101-55, p. 2-10. A valid question can be asked - whose plans must be adjusted, the commander's plans developed and supervised by the staff or the subordinate commander's plans developed from his personal observation and first hand information.

35. Ibid, p. 3-9. This statement should be contrasted against the warning that "when a mission is issued there must be no doubt what that mission entails. All must stem from this clear statement of the commander's intent," FC 101-55, p. 1-5.

36. Schultz, "Selected German Operations on the Eastern Front VOL III", p. 289.

37. Gissin, p. 445.

38. Maj Vernon Humphrey, USA, "NTC: Command and Control", (Infantry Magazine, Sept-Oct 1984), p. 36.

39. Maj Harry Teston Jr., USA, "Command and Confusion at NTC", (Military Review, Nov 1985), pp. 56-64.

40. Timmerman, p. 55.

IV. CONCLUSION:

1. Gen von Senger, "Selected Operations on the Eastern Front Vol III", p. 128.

2. du Picq, p. 134. du Picq writes: "In modern war nobody knows what goes on or what has gone on, except from results". See also LTC Timmerman's article, "Of Command and Control and Other Things", in the May issue of Army Magazine, p. 57.

3. Maj Dennis Long, USA, "Command and Control- Restoring the Focus," (Military Review, Nov 1981), p. 25.

4. Balck, April 1979 interview, p. 22.

5. This has been an ever increasing aspect of modern warfare. No matter how much control has been built into organizations and unit procedures before combat, it has consistently broken down under the stress of modern war, see du Picq, p. 157 (written concerning the period before the 1870-71 Franco-Prussian War); S.L.A. Marshall, Men Against Fire, (Gloucester, MA: Peter Smith, 1978), p. 22

(as a result of his experiences during World War II); and Luttwak, p. 162 (as a result of his study of the Arab-Israeli Wars - through 1973).

6. du Picq, p. 141.

7. Jay Luvaas, The Education of an Army: British Military Thought, 1815-1940, (The University of Chicago Press, 1964), p. 394.

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